“The Yield Curve as a Leading Indicator: Some Practical Issues”

– Arturo Estrella & Mary, R, Trubin, Volume 12, Number 5, July / August 2006, Federal Reserve Bank of New York

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Today’s Presentation Includes...

- Paper review
- Comments (strength & weakness)
Paper Review - Practical Issues...

- A conceptual relationship between the yield inversion and recessions?

- A standard forecasting model? i.e.,
  - what rates to use?
  - How to define a recession?
  - how to connect the two?
Paper Review – a single accepted explanation?

A broad range of reasonable explanations

- Monetary Policy.
- Changes in investor expectations.
Proposed Model:

- A probability model that translates the steepness of the yield curve at the present time into a likelihood (probability) of recession some time in the future.
  1. A measure of the change of Yield (the spread)
  2. A definition of recession
  3. A model connects the two

Paper Review – standard approach for forecasts?
1. A measure of the change of Yield

the value of the term spread, that is, the difference between long and short term interest rate in month t.

- readily availability of historical data
- consistency in computation
- maturities far apart

Therefore: ten-year treasury bond yield & three-month secondary market bill rate
2. Definition of Recession

The National Bureau of Economic Research defines a recession as

“A significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales.”
3. How to connect the two?

\[ F(x) = \int_{-\infty}^{x} \frac{1}{\sqrt{2\pi}} \exp(-x^2/2)dx \]

\[ \text{Recess } mt +12 = F(\alpha + \beta \ spr \ dt ), \]

where \( spr \ dt \) is the difference between long- and short term interest rates in month \( t \), \( \alpha \) and \( \beta \) are constants, \( F \) is the cumulative normal distribution function.

Result: The values of \( \alpha = -0.6045 \) and \( \beta = -0.7374 \) were estimated using data from January 1959 to December 2005.
Paper Review – Model Result

Chart 2
Probability of U.S. Recession Twelve Months Ahead, as Predicted by the Treasury Spread
Monthly Average

Source: Authors’ calculations, based on data from the H.15 statistical release of the Board of Governors of the Federal Reserve System.

Notes: The probabilities are estimated using data from January 1959 to December 2005. The estimated probability of recession in July 2007 is 27 percent. The shaded areas indicate periods designated national recessions by the National Bureau of Economic Research.
Paper Review – Additional Comments

- Level Vs. % Change?

- Understand the result
  1. Persistent & Strength?
  2. Driven by long term or short term changes?
Comment – Weakness

- Relevance of the topic?
- Statistical Driven
- Assumptions, i.e., Linear & Normal Distribution?
  ⇒ Predictability of the model?
- Market Forces?

Have Practical Issues Been Solved?
Comment – Strength

- Successfully Validating the Data